

Remarks

Claims 1-11 are pending.

In the Drawings

The drawings are objected to under 37 C.F.R. §1.83(a) for failing to show every feature of the invention specified in the claims. Specifically, the Examiner contends that the claimed image plane is not shown in the drawings. The applicants respectfully traverse this objection.

As an initial matter, the applicants note that use of the claim limitation “image plane” was found acceptable in the present application’s parent case, U.S. Patent No. 6,366,370. Moreover, the applicants respectfully submit that “image plane” is a term that can encompass “hologram plane,” and since the hologram plane is shown in numerous figures of the present application, the requirements of 37 C.F.R. §1.83(a) have been satisfied. The specification is replete with examples where the term “image plane” is used to encompass “hologram plane”. For example, page 10, lines 3-7 of the specification state:

As stated above, the description herein is in terms of constructing holograms. When the display is to be other than a hologram, the hologram plane 13 and the hogels 13a might alternatively be referred to as the image plane and the image plane elements.

Accordingly, the applicants respectfully submit that the drawings satisfy the requirements of 37 C.F.R. §1.83(a), and no amendment is necessary.

Rejection of Claims under 35 U.S.C. § 112

Claims 1-11 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner states that the meaning of the recitation “defining a near clipping plane of said frustra on said image plane,” cannot be ascertained by the Examiner. The applicants respectfully traverse this rejection.

The applicants respectfully submit that the meaning of the recitation “defining a near clipping plane of said frustra on said image plane,” is clear and unambiguous from the

language itself, and is particularly so in light of the disclosure of the specification. The claim limitation recites: (1) defining a near clipping plane; (2) that the near clipping plane is of the frustra; and (3) that the near clipping plane is on the image plane. One of ordinary skill in the art would readily understand that one or more camera frustra can have associated near clipping planes. The claim limitation merely defines where a particular near clipping plane is. Moreover, the language of this limitation is consistent with the description present in the applicants' specification. For example, page 10, lines 15-19 state:

FIGURES 3A and 3B shows the cameras 14 and 15 translated along the z-axis toward the hologram plane 13. The translation is a distance such that the near clipping planes 17 coincide with the hologram plane 13.

Thus, the applicants respectfully submit that the recited claim language is definite and particularly points out and distinctly claims the subject matter which applicants regard as the invention. Additionally, the applicants note that use of the same claim language was found acceptable in the present application's parent case, U.S. Patent No. 6,366,370.

Rejection of Claims under 35 U.S.C. § 103

Claims 1-11 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Halle et al., "Fast Computer Graphics Rendering for Full Parallax Spatial Displays" (Halle) in view of Robertson et al., U.S. Patent No. 5,949,430 (Robertson). The applicants respectfully traverse these rejections.

Halle and Robertson taken alone or in combination neither teach nor suggest a computer-implemented method of rendering data for producing a full parallax autostereoscopic display of a digital scene including:

... for each image element, determining a distance between said eyepoint and said near clipping plane that would avoid near clipping of said scene, thereby determining a set of near clipping plane distances;

positioning said camera frustra along a z axis in accordance with one or more of said near clipping plane distances;

as required by independent claim 1 and generally required by independent claims 10 and 11. Regarding both limitations, the Examiner states:

Robertson et al., however, provide a teaching of commonly used methods (viz., culling algorithms: see column 8, lines 23-28), each of which could arguably be used to determine a distance between an eyepoint (e.g., the tip of camera 1402's FOV depicted in Fig. 14) and a near clipping plane that would avoid near clipping of a scene, thereby determining a set of near clipping plane distances; and positioning said camera frusta along said z axis (read: z-axis) in accordance with one or more of said near clipping plane distances. (Office Action of November 2, 2004, p. 5, ¶3, emphasis in original)

The applicants respectfully disagree.

The applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. As noted in MPEP § 2143.03, all claim limitations must be taught or suggested by the prior art. The Examiner points to no teaching or suggestion in Robertson that: (1) for each image element a distance between an eyepoint and the applicants claimed near clipping plane is determined that would avoid near clipping of the, thereby determining a set of near clipping plane distances; or (2) positioning a camera frustra along a z-axis in accordance with one or more of the determined near clipping plane distances. Instead, the Examiner merely hypothesizes that “commonly used methods (viz., culling algorithms: see column 8, lines 23-28), each of which *could arguably* be used to determine a distance” Emphasis added. This is not the teaching of Robertson. In fact, the cited portion of Robertson states:

It must also be noted that objects which fall between the region between the camera frustum origin and the reflective surface should not be rendered directly by the camera. To prevent this any of the commonly used culling algorithms may be used (step 1514 in **FIG. 15**).

Not only does the cited portion of Robertson fail to teach or suggest the applicants' claim limitations, but no portion of Robertson describes what these “commonly used culling algorithms” are, or how they might be applied.

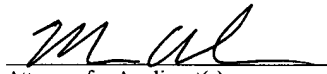
In addition to the claim elements not taught or suggested by the cited references as described above, the Examiner has not shown that there is some suggestion or motivation to combine Halle and Robertson, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Neither reference suggests such a combination, and the Examiner merely states:

It would have been obvious . . . to have modified the teachings of **Halle et al.** such that one of the culling algorithms taught by **Robertson et al.** be implemented, . . . for at least the purpose of optimizing not only said computer-implemented method of rendering data taught by **Halle et al.**, but the overall visual characteristics exhibited by prints or various media generated via such a method. (Office Action of November 6, 2004, p. 6, ¶1, emphasis in original)

As noted above, Robertson does not in fact teach any culling algorithms or how they are applied. As for the "purpose of optimizing" to which the Examiner refers as motivation to combine the references, the applicants respectfully submit that the Examiner has failed to explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination, as required by, for example, *In re Rouffet*, 47 USPQ2d 1453 (Fed. Cir. 1998).

Accordingly, the applicants respectfully submit that independent claims 1, 10, and 11 are allowable over Halle and Robertson taken alone or in combination. Claims 2-9 depend from independent claim 1 and are allowable for at least this reason.

In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the examiner is requested to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA, 22313-1450, on <u>Dec 2</u> , 2004.	
 Attorney for Applicant(s)	<u>12/2/04</u> Date of Signature

Respectfully submitted,



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